

WHAT IS CLAIMED IS:

1. A method for capturing at least one image of an existing man-made structure and for detecting the presence of failure(s) in such existing man-made structures comprising the steps of:

(a) providing a detectable material on the surface or in an existing man-made structure so that portions of the detectable material will be present in the failure(s) of the existing man-made structure;

(b) providing an image sensor and which captures at least one image of the existing man-made structure and identifies failure(s) due to the existence of the detectable material in the failure(s) to provide at least one digital image; and

(c) processing the captured digital image(s) to provide a visual image of the existing man-made structure to determine the presence of failure(s) in the existing man-made structure.

2. The method of claim 1 wherein the image sensor is spaced remotely from the existing man-made structure and further including:

(d) sending captured processed digital images with detected failures to a customer.

3. The method of claim 1 wherein the digital image processing includes comparing previously captured digital images with newly captured digital image(s) to determine variations in the captured digital image(s) at predetermined coordinates which indicate a potential failure in the existing man-made structure.

4. The method according to claim 1 wherein the digital image(s) is captured by a capture device which is located in a fixed structure position above the ground location or in a moving structure including an aircraft or satellite.

5. The method of claim 3 wherein the image processing includes storing in memory a representation of different failures to be detected and comparing the captured digital image with the failures to determine the presence of a failure, and location of such failure.

6. The method of claim 1 wherein the detectable material interacts with incident radiation to cause radiation from the failure in the existing man-made structure to be detected by the image sensor.

7. The method of claim 6 wherein the detectable material includes encapsulated dyes or phosphors.

8. The method of claim 6 wherein the detectable material is included in a liquid solution or solid solution which is distributed on the failure in the existing man-made structure.

9. The method of claim 6 wherein the detectable material is a lanthanide, and wherein the lanthanide is combined with halogen elements to form a detectable halide.

10. The method in claim 6 wherein the detectable material includes cholesteric characteristics and change their orientation based on thermal equilibrium with the surroundings and to thereby exhibit a different color that can be detected by the image sensor.